

AMENDMENTS TO THE CLAIMS

The following listing of claims will replace all prior versions and listings of claims in the application.

LISTING OF CLAIMS

1. (Currently Amended) A cooling roll for manufacturing a ribbon-shaped magnetic material by colliding a molten alloy to a circumferential surface of the cooling roll so as to cool and then solidify the molten alloy, the cooling roll comprising:

gas expelling means defined by at least one groove provided in the circumferential surface of the cooling roll for expelling gas entered between the circumferential surface and a puddle of the molten alloy;

wherein the average width of the groove is 0.5 – 90 μm for preventing the molten alloy from entering the groove, and the groove is formed spirally with respect to the rotation axis of the cooling roll.

2. (Original) The cooling roll as claimed in claim 1, wherein the cooling roll includes a roll base and an outer surface layer provided on an outer peripheral portion of the roll base, and said gas expelling means is provided in the outer surface layer.

3. (Previously Presented) The cooling roll as claimed in claim 1, wherein the outer surface layer of the cooling roll is formed of a material having a heat conductivity lower than the heat conductivity of the structural material of the roll base at room temperature.

4. (Original) The cooling roll as claimed in claim 2, wherein the outer surface layer of the cooling roll is formed of a ceramics.

5. (Previously Presented) The cooling roll as claimed in claim 2, wherein the outer surface layer of the cooling roll is formed of a material having a heat conductivity equal to or less than $80 \text{ W m}^{-1} \text{ K}^{-1}$ at room temperature.

6. (Previously Presented) The cooling roll as claimed in claim 2, wherein the outer surface layer of the cooling roll is formed of a material having a coefficient of thermal expansion in the range of $3.5 - 18 [\times 10^{-6} \text{ K}^{-1}]$ at room temperature.

7. (Original) The cooling roll as claimed in claim 2, wherein the average thickness of the outer surface layer of the cooling roll is 0.5 to $50 \mu\text{m}$.

8. (Original) The cooling roll as claimed in claim 2, wherein the outer surface layer of the cooling roll is manufactured without experience of machining process.

9. (Original) The cooling roll as claimed in claim 1, wherein the surface roughness R_a of a portion of the circumferential surface where the gas expelling means is not provided is $0.05 - 5 \mu\text{m}$.

10. – 11. (Cancelled)

12. (Previously Presented) The cooling roll as claimed in claim 1, wherein the average depth of the groove is 0.5 – 20 μm .

13. (Previously Presented) The cooling roll as claimed in claim 1, wherein the angle defined by the longitudinal direction of the groove and the rotational direction of the cooling roll is equal to or less than 30 degrees.

14. (Cancelled)

15. (Previously Presented) The cooling roll as claimed in claim 1, wherein the at least one groove includes a plurality of grooves which are arranged in parallel with each other through an average pitch of 0.5 – 100 μm .

16. (Previously Presented) The cooling roll as claimed in claim 1, wherein the groove has openings located at the peripheral edges of the circumferential surface.

17. (Previously Presented) The cooling roll as claimed in claim 1, wherein the ratio of the projected area of the groove with respect to the projected area of the circumferential surface is 10 – 99.5%.